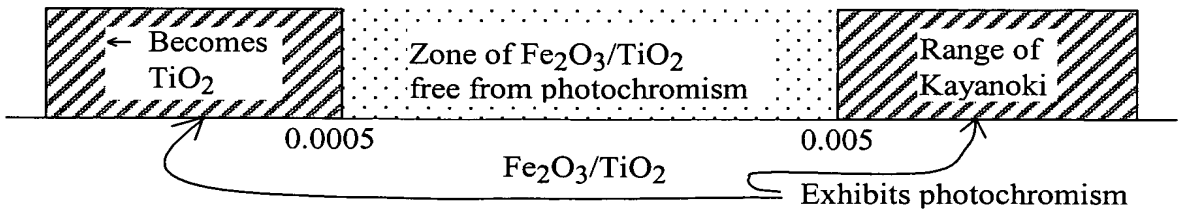
The Examiner has rejected claims 1-14 under 35 U.S.C. § 103(a) for obviousness over U.S. Patent No. 5,963,373 to Kayanoki (hereinafter "Kayanoki") in view of U.S. Patent No. 6,077,341 to Terase et al. (hereinafter "Terase"). The Examiner asserts that Kayanoki substantially discloses the substrate, coating liquid, hard coat film, composite metal oxide particles, particle size limitations, matrix-forming component, organosilicon surface treatment and anti-reflection film of the claimed invention, but does not specifically state that the weight ratio of the iron oxide to the titanium oxide may be 0.0005 to less than 0.005, or 0.001 to 0.0045. The Examiner asserts that Terase discloses silica-metal oxide particulate composites incorporating titanium oxide, ferrous oxide and ferric oxide, optionally in combination, and that the metal oxides and their amounts may be selected depending on the particular purpose of the composite material. The Examiner concludes that it would have been obvious to one of ordinary skill in the art to have determined the optimum weight ratio of the iron oxide to the titanium oxide through routine experimentation given that the blend ratio of the iron oxide to the titanium oxide may be varied to obtain shielding within a specific wavelength region, i.e., UV region vs. visible light region.

However, the claimed range of metal oxide ratio not only differs from that disclosed by Kayanoki, but provides unexpected advantages that are neither taught nor suggested by Kayanoki. One of the applicants in the present application has investigated the effect of the specific ratio of Fe_2O_3/TiO_2. The results of this study are reported in the attached Declaration Under 37 C.F.R. §1.132 and in the following Table A:

TABLE A

	Sol		Photochromism	High Refractivity	Scuffing Resistance	Appearance	Dye affinity	Water resistance		Cloudiness	Stability	
	Fe_2O_3/TiO_2	$SiO_2/(Fe_2O_3 + TiO_2)$						Coloring	Adherence		25 days	45 days
Example 1	1/499		none	o	A	o	o	none	o	o	o	x
Comp. Ex. 1	2/98		exhibited	o	A	o	o	occurred	o	o	o	x
Example 2	1/499		none	o	A	o	o	none	o	o	o	Δ
Example 3	1/499	15/100	none	o	A	o	o	none	o	o	o	o
Example 4	1/999		none	o	A	o	o	none	o	o	o	x
Comp. Ex. A	4/9996		exhibited	o	A	o	o	none	x	o	o	x
Comp. Ex. B	7/993		exhibited	o	A	o	o	occurred	o	o	o	x

As is shown in Table A, the hard coating film of Comparative Example A (having a Fe_2O_3/TiO_2 weight ratio of 0.0004, lower than the claimed lower limit) has photochromism and glows slightly blue when irradiated by ultraviolet rays. The hard coating film of Comparative Example B (the Fe_2O_3/TiO_2 weight ratio being 0.007, higher than the claimed upper limit) has photochromism and glows yellow when irradiated by ultraviolet rays. Furthermore, the water resistances of the hard coating films of Comparative Examples A and B are insufficient. However, a composite metal oxide having the weight ratio of iron oxide to titanium oxide claimed in claim 1 of the present application is free from photochromism.



Hard coating films having an Fe_2O_3/TiO_2 ratio outside the claimed range exhibit photochromism; these films glow yellow or blue upon irradiation by ultraviolet rays. Furthermore, these films have insufficient water resistance. Kayanoki does not teach the elimination of these effects.

Furthermore, Terase does not teach or suggest a coating film constructed according to the present invention. Terase teaches a mixture of metal oxide particulates supported on silica agglomerates. Silica agglomerates are not used in the present invention. Composite oxide particles having a limited Fe_2O_3/TiO_2 ratio (0.0005 to 0.005) are used in the present invention. Terase does not suggest this range of Fe_2O_3/TiO_2. Photochromism is not the same phenomenon as the shielding from ultraviolet rays described in Terase. Shielding, which is addressed by Terase, refers to absorption or scattering of particular wavelengths, so that they are not transmitted. The present application addresses photochromism, i.e., the coloring or tone change resulting from irradiation with, for example, ultraviolet rays. TiO_2, used alone, is effective in shielding from ultraviolet rays. However, a hard coating film containing only TiO_2 is inadequate with respect to water resistance, scuffing resistance, attrition resistance, dye affinity, and adherence. Furthermore, photochromism appears.

Kayanoki does not teach or suggest the formation of particles of a composite metal oxide, as is claimed in claim 1 of the present application. Neither Kayanoki nor Terase teaches or suggests the unexpected advantages of a coating liquid for forming a hard coat film, with an Fe_2O_3/TiO_2 weight ratio in the range of 0.0005 to less than 0.005, as is claimed in claim 1 of the

present application. Accordingly, the combined teachings of Kayanoki and Terase do not render the present invention obvious. For these reasons, the rejection of claims 1-14 over Kayanoki in view of Terase is believed to have been overcome.

In view of the above, it is submitted that the claims are in condition for allowance. Reconsideration of the rejection and allowance of claims 1-14 are respectfully requested.

Respectfully submitted,

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